

whiteness, without any terminations of shadows, the refraction of a Prism should make Rings of Colours appear, whereas it usually makes Objects appear coloured only there where they are terminated with shadows, or have parts unequally luminous; and that it should make those Rings exceedingly distinct and white, although it usually renders Objects confused and coloured. The cause of these things you will understand by considering, that all the Rings of Colours are really in the plate, when viewed with the naked Eye, although by reason of the great breadth of their circumferences they so much interfere and are blended together, that they seem to constitute an even whiteness. But when the rays pass through the Prism to the Eye, the orbits of the several Colours in every Ring are refracted, some more than others, according to their degrees of refrangibility: By which means the Colours on one side of the Ring (that is on one side of its Center) become more unfolded and dilated, and those on the other side more complicated and contracted. And where by a due refraction they are so much contracted, that the several Rings become narrower than to interfere with one another, they must appear distinct, and also white, if the constituent Colours be so much contracted as to be wholly coincident. But, on the other side, where the orbit of every Ring is made broader by the further unfolding of its Colours, it must interfere more with other Rings than before, and so become less distinct.

Fig. 7. To explain this a little further, suppose the concentrick Circles A V, and B X, represent the red and violet of any order, which, together with the intermediate Colours,

Colours, constitute any one of these Rings. Now these being viewed through a Prism, the violet Circle B X, will by a greater refraction be further translated from its place than the red A V, and so approach nearer to it on that side, towards which the refractions are made. For instance, if the red be translated to av , the violet may be translated to bx , so as to approach nearer to it at x than before, and if the red be further translated to av , the violet may be so much further translated to bx as to convene with it at x , and if the red be yet further translated to ar , the violet may be still so much further translated to bx as to pass beyond it at x , and convene with it at e and f . And this being understood not only of the red and violet, but of all the other intermediate Colours, and also of every revolution of those Colours, you will easily perceive how those of the same revolution or order, by their nearness at xv and rx , and their coincidence at xv , e and f , ought to constitute pretty distinct Arcs of Circles, especially at xv , or at e and f , and that they will appear severally at xv , and at xv exhibit whiteness by their coincidence, and again appear several at rx , but yet in a contrary order to that which they had before, and still retain beyond e and f . But, on the other side, at ab , a b , or ar , these Colours must become much more confused by being dilated and spread so, as to interfere with those of other Orders. And the same confusion will happen at rx between e and f , if the refraction be very great, or the Prism very distant from the Object-Glasses: In which case no parts of the Rings will be seen, save only two little Arcs at e and f , whose distance from one

G g 2

another,